

Indiana State of the Environment Report

Land Quality



Photo by Richard Fields, Indiana Department of Natural Resources.

Hoosiers want our land to be free from unsafe chemicals and waste. Whether taking on the challenge of a fresh blanket of snow—a skier's delight—at the Upper Cascades Park in Bloomington, playing at an Evansville playground, plowing fields or working in an industrialized area in any part of the state, our land must be clean and safe for human activities and natural enjoyment.

Land quality

Indiana terrain

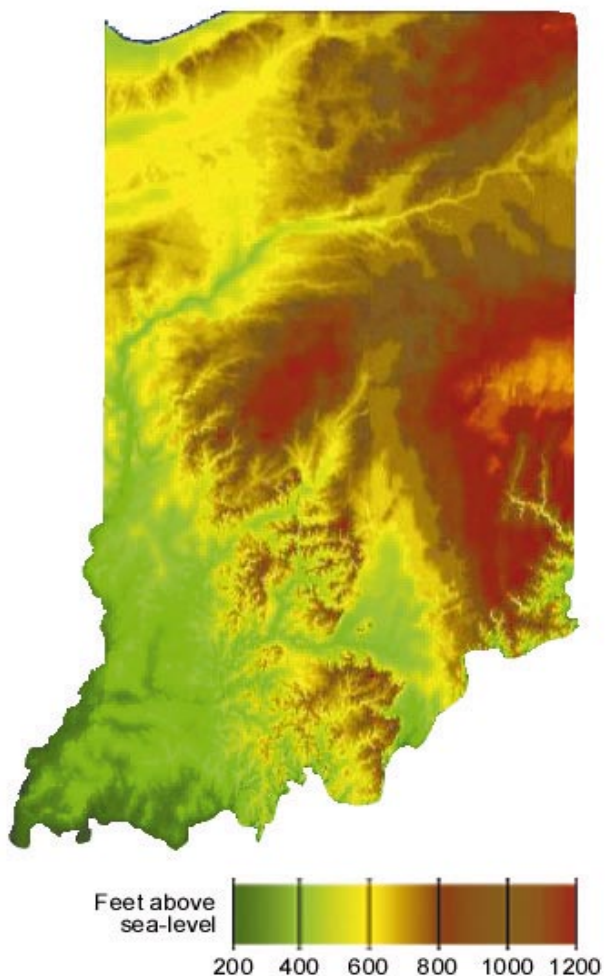
Indiana covers an area of 36,300 square miles, of which 99 percent is land. Indiana's topography ranges from 324 to 1,257 feet above sea level. The lowest point of elevation is in the southwest corner of Indiana, where the Wabash River flows into the Ohio River. The highest point is in Wayne County in east central Indiana in an open field, marked by a small pile of stones.

Past waste management practices have caused many significant problems that the state must continue to address, including contaminated sites, leaking underground storage tanks, spills, landfills and open dumps that contaminate ground water.

Thousands of contaminated Indiana properties require cleanup. Many are actively under investigation or cleanup. Others are yet to be discovered.

Once identified, contaminated sites are assessed for their potential threat to human health and the environment, which determines the approach taken to clean them up.

Indiana topography



Source: Indiana Geological Survey, 1988

for more details
visit land.in.gov

www.state.in.us/iden/soe/99report/land

Contaminated sites

Prior to the 1970s, waste disposal was largely uncontrolled. Industries dumped hazardous wastes onto the land and left drums filled with hazardous materials outside to leak and corrode. Garbage was taken to town dumps where it was burned or buried without environmental protection. The result was contaminated sites.

Restoring natural resources

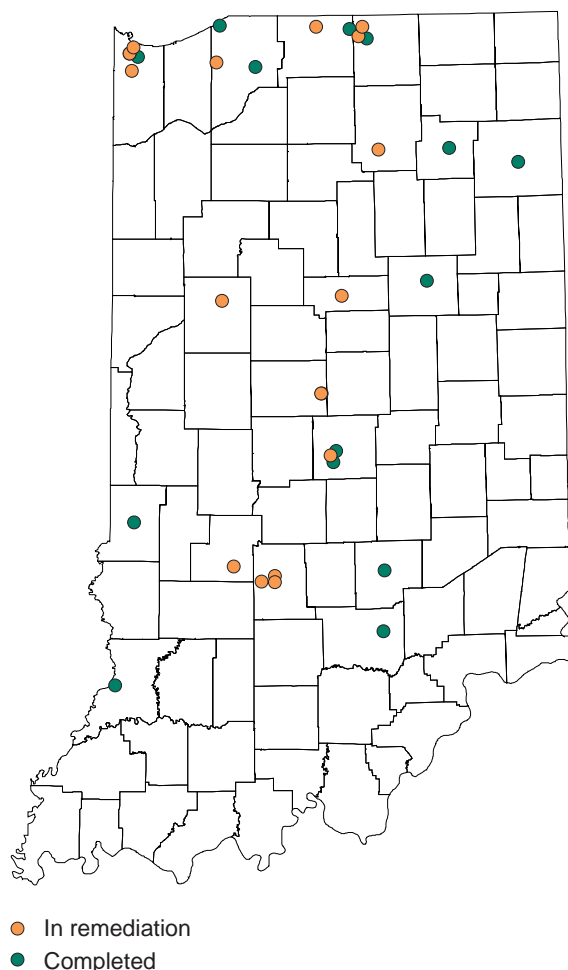
State and federal natural resource trustees assess injury to natural resources at contaminated sites and surrounding areas.

In 1998, more than 650 acres of land were restored or acquired by the Natural Resource Trustees to replace injured resources in Indiana. Since 1997, more than 900 acres of land have been restored or acquired.

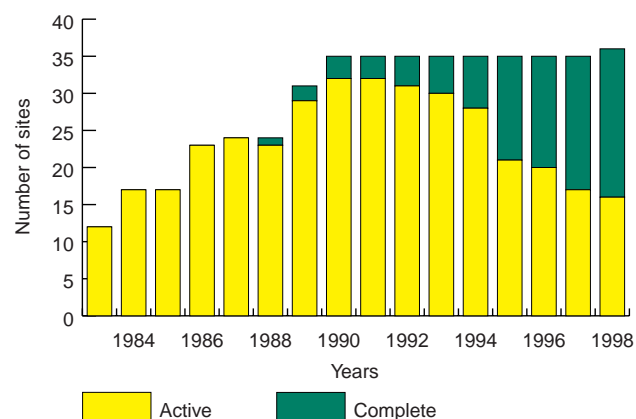
Superfund cleanups

The federal Superfund targets complex, heavily contaminated sites for cleanup, focusing on those sites that pose the greatest health threats. Superfund sites commonly contain soils contaminated by improperly stored or disposed chemicals. Wetlands, ground water, lakes and rivers may be contaminated through soil contact or storm water runoff.

Current cleanups of Superfund sites



Superfund cleanups



Source: IDEM Office of Environmental Response, 1998

State cleanups

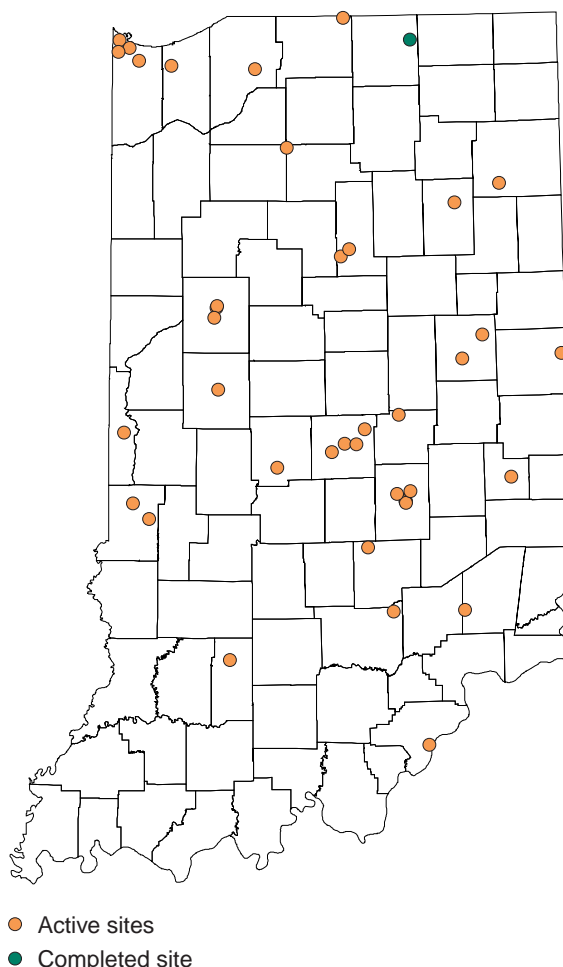
Many sites identified as needing remediation do not qualify as Superfund sites due to the level or nature of the contamination. Of the 61 sites in the state that have been identified for potential action, 21 were under oversight by the State Cleanup Program and one site was completed and closed in 1998. A new program, Response Remediation, was started in 1998 to oversee long-term remedial actions at former emergency response sites. Through this program, 39 additional sites were overseen for remediation in 1998.

Military cleanups

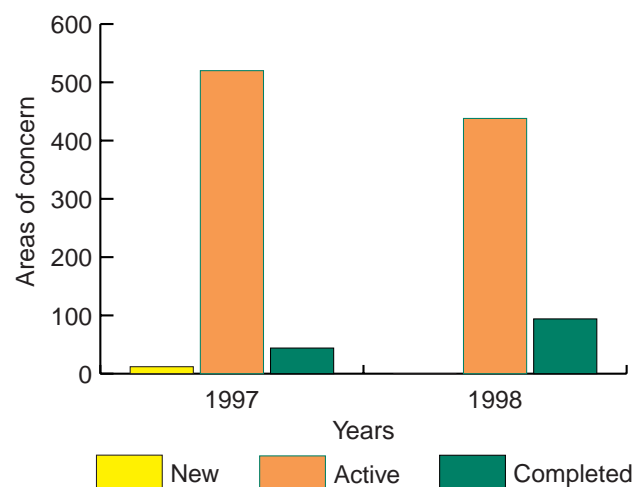
Under Superfund authority, IDEM oversees and assists the U.S. Department of Defense in the investigation and cleanup of nine active or closing military bases and several other formerly used defense sites in Indiana where hazardous substances were used, stored or disposed. Each installation has many different areas that require cleanup. In 1997, 44 of 576 areas were completed; in 1998, there were 532 areas of concern that necessitated investigation and possible cleanup, 94 of which were completed.[†] The cleanup and reuse of military properties have created two new state parks, Charlestown and Fort Benjamin Harrison, and a new state correctional facility currently under construction at the former Grissom Air Force Base.

[†] The number of military cleanup areas for 1997 was reported incorrectly in the 1998 *State of the Environment Report* as 528. The correct number is 576.

State and military cleanup sites



Military cleanups

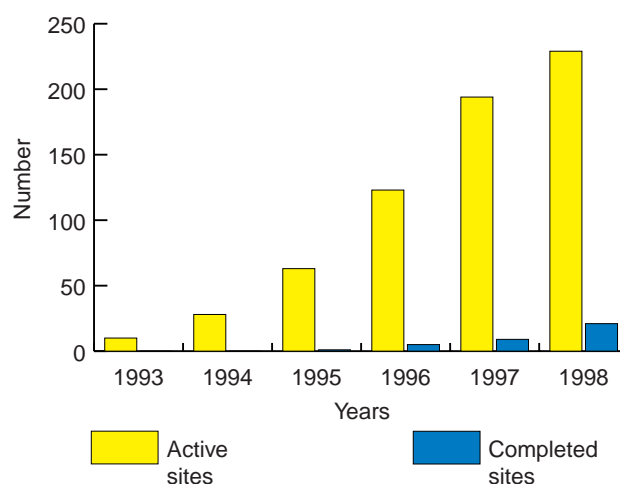


Source: IDEM Office of Environmental Response, 1998

Voluntary remediation

Indiana's Voluntary Remediation Program enables eligible property owners or other responsible parties to clean up sites quickly and to receive a Covenant Not To Sue for further action from the governor. Since this program's inception in 1993, 266 sites have applied, and 36 sites have been cleaned up. In 1998, there were 229 active projects and 21 completed cleanups, 20 of which received Covenants Not To Sue. The Voluntary Remediation Program allows companies to obtain state concurrence with their independent self-funded cleanup activities.

Voluntary remediation

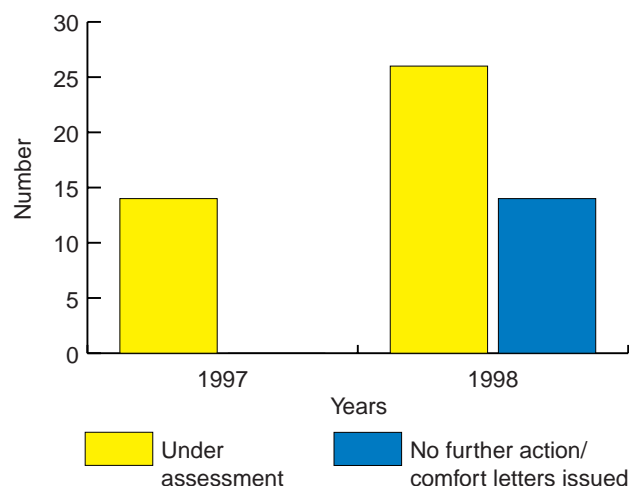


Brownfields redevelopment

Brownfields are abandoned, idled or underused properties where environmental contamination, either real or perceived, hinders reuse. One may be as small as a vacant corner gas station or as large as an abandoned factory. Environmental issues can add cost, time and uncertainty to brownfields redevelopment projects.

Redeveloping brownfields links economic vitality and jobs with environmental protection. Recycling brownfields into productive use discourages urban sprawl, preserves farmlands and open space and revives city neighborhoods. In 1997, IDEM assisted 15 Indiana communities in the redevelopment of 20 sites. By the end of 1998, there were 61 Indiana communities with 63 brownfields sites targeted for redevelopment.

Brownfields redevelopment



Source: IDEM Office of Environmental Response, 1998

Underground storage tanks

Underground storage tanks at gas stations and other businesses are a common source of soil and ground water contamination. Contaminants from leaking underground storage tanks can reach drinking water wells or travel as vapors into sewers and basements, creating explosion danger and threatening human health and the environment. These sites are cleaned up by responsible parties or by IDEM.

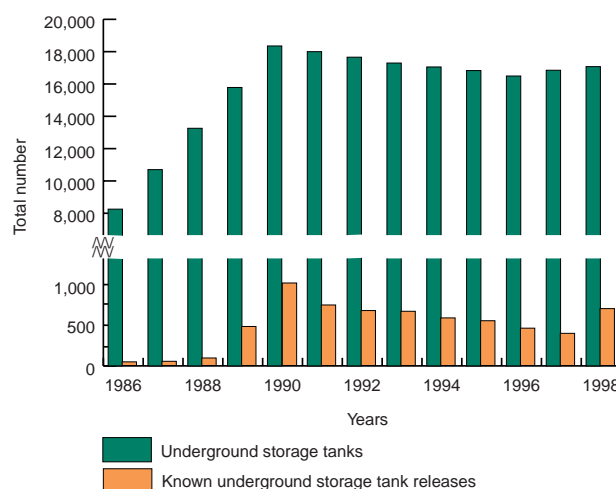
Since 1986, more than 6,500 regulated underground storage tanks have been reported as leaking in Indiana. At the end of 1998, 37 percent of these tanks had been approved for closure cleanup. Approximately 10 percent of all identified leaking tanks were considered significant threats to humans or the environment and were undergoing cleanup.

Only 45 percent of facilities with registered underground storage tanks were in compliance with federal requirements for leak detection, spill and overfill prevention, and corrosion protection by the December 22, 1998, deadline.

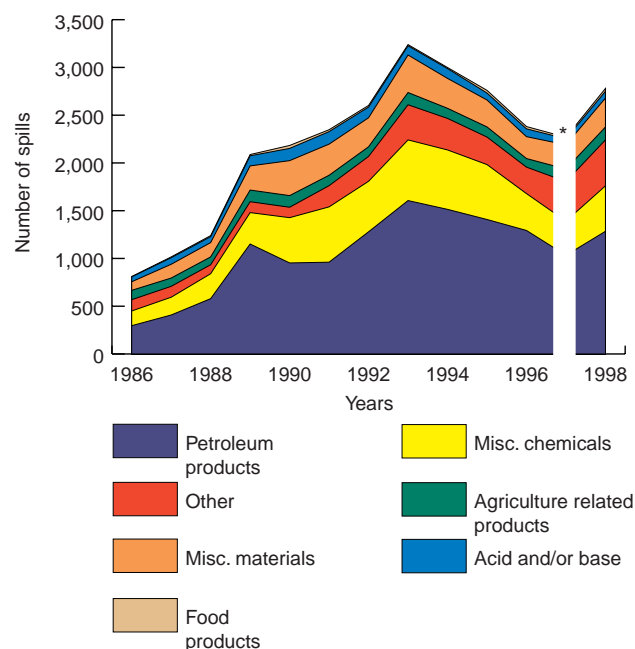
Environmental response

Chemical spills, agricultural waste releases, explosions and other disasters endanger human health and the environment. These threats can expose people to hazardous fumes or liquids or contaminate drinking water supplies. In 1998, more than 2,600 spills were reported, compared to more than 2,100 in 1997. Reported spills are categorized by priority, based on the amount spilled, the toxicity of the substance and the location of the spill. In 1998, 14 percent of all reported spills were categorized as Priority I, the highest priority ranking.

Registered underground storage tanks



Spill reports



*A substantial revision to reporting rules was made in 1997. This resulted in a change of reporting practices and totals

Source: IDEM Office of Environmental Response, 1998

Hazardous waste

Hazardous waste generation

Ignitable, corrosive, reactive or toxic hazardous wastes pose substantial threats to human health and the environment if they are not properly managed.

In 1997, 626 Indiana facilities generated 7.3 million tons of hazardous waste. While this is an 11 percent increase from 1995, manufacturing activities increased 15 percent, more facilities were generating waste, and the economy was producing goods at near capacity.

Hazardous waste treatment and disposal

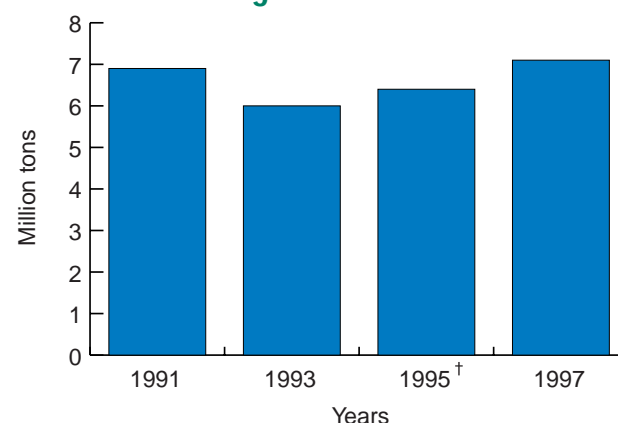
Most hazardous waste generated in Indiana is treated on site in treatment systems regulated by the Clean Water Act. During 1997, 95 percent of the hazardous waste generated was treated in this manner at the sites of generation. The remaining waste required more sophisticated treatment or disposal and was sent off site to permitted hazardous waste treatment, storage or disposal facilities.

During 1997, permitted treatment, storage and disposal facilities in Indiana received approximately 605,000 tons of hazardous waste from both in-state and out-of-state sources. This waste was recovered and reused, incinerated, landfilled or otherwise treated.

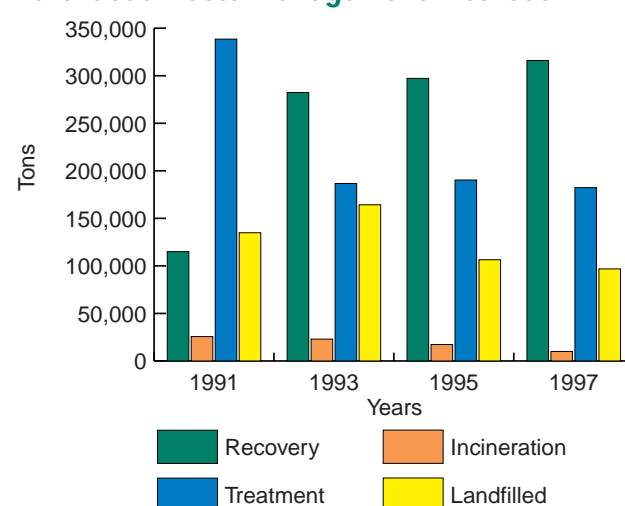
In 1997, Indiana shipped approximately 160,000 tons of hazardous waste to 26 states, 70,000 tons less than in 1995. Indiana treatment, storage and disposal facilities received approximately 260,000 tons of waste from 48 states, the same amount as in 1995.

† The amount of hazardous waste generated in 1995 was reported incorrectly in the *1998 State of the Environment Report* as 8.4 million tons due to a generating facility reporting error. The correct amount is 6.5 million tons.

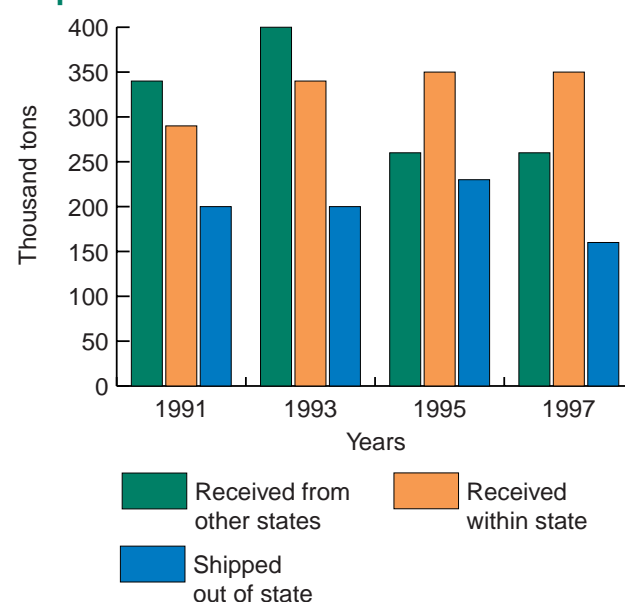
Hazardous waste generation



Hazardous waste management methods



Shipments of hazardous waste



Source: Resource Conservation and Recovery Act Biennial Hazardous Waste Report, 1991-1997

Solid waste

Disposal

Waste that is not diverted from disposal goes to a permitted landfill or incinerator. Disposal rates for all permitted municipal solid waste landfills and transfer stations vary by county, as shown by the map. In 1998, Indiana had 37 operating municipal solid waste landfills, down from 72 in 1991.

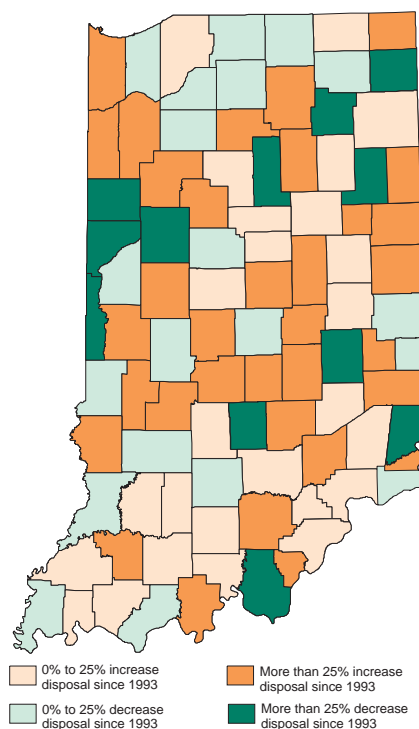
An estimated 400 landfills and municipal dumps have been closed in Indiana. Many of these sites were closed before environmental protection laws were in place and, therefore, may pose a risk to ground and surface water. State cleanup programs address these sites with 33 closed to minimize environmental and health concerns and six in the process of remediation.

Source reduction and recycling

Indiana encourages source reduction and recycling and, in 1990, established voluntary goals to reduce waste disposal 35 percent by January 1996 and 50 percent by January 2001. The source reduction and recycling rate for municipal solid waste decreased 3 percentage points between 1996 and 1997 from 24 percent to 21 percent.[†]

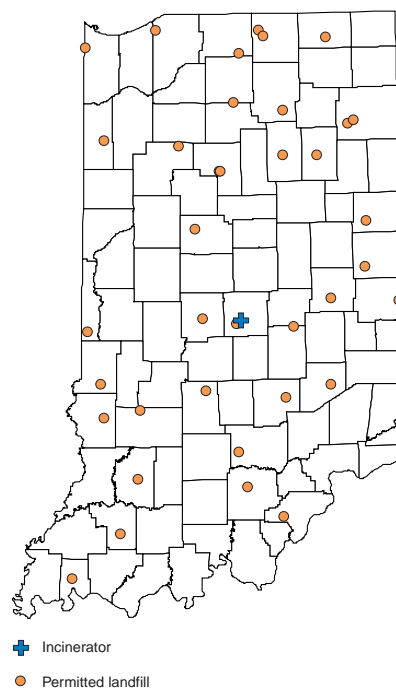
[†] The source reduction and recycling rate for 1996 was incorrectly reported in the 1998 *State of the Environment Report* as 23 percent. The correct rate is 24 percent.

Disposal rates per county, * 1993-1997



* Based on information reported by Indiana landfills and transfer stations. Information from Ohio and Kentucky was also used. Information from Michigan and Illinois was not available.

Municipal solid waste disposal facilities



Source: IDEM Office of Pollution Prevention and Technical Assistance and Office of Solid and Hazardous Waste Management, 1998

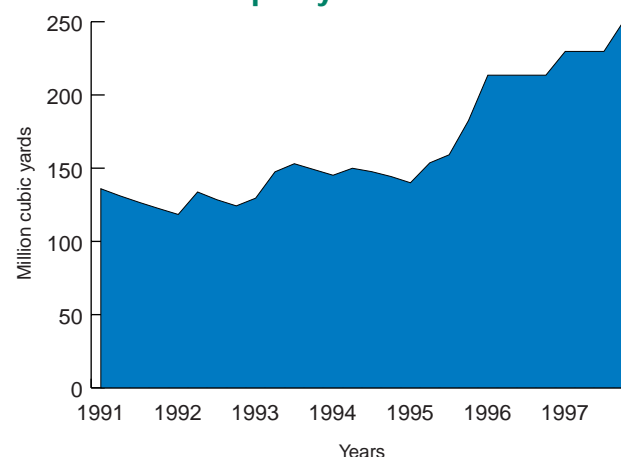
Municipal solid waste landfills

Although the number of landfills is decreasing, the average size of each is growing. At the end of 1997, Indiana's municipal solid waste landfills had a combined capacity of approximately 250 million cubic yards. This is an increase of nearly 110 million cubic yards from the 1995 total capacity. In 1998, 44 percent of Indiana landfill capacity was being utilized. Depending on disposal rates, this landfill space is predicted to last until sometime in 2011. However, it is expected that landfill expansions will continue to provide future capacity.

Waste imports affect the amount of landfill capacity available for Indiana residents and businesses. In 1997, out-of-state trash accounted for 27 percent of the waste disposed in Indiana's municipal solid waste landfills, 6 percentage points more than in 1996. In contrast, in 1997, an estimated 10 percent of Indiana's municipal solid waste was disposed out of state.

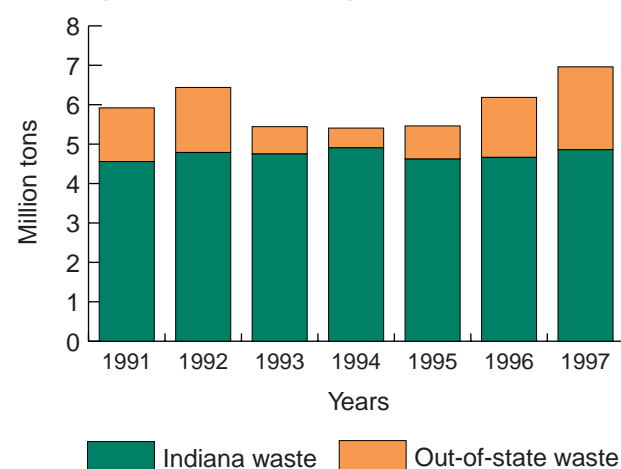
The design and construction of landfills over the years have improved significantly. New landfill areas are required to have composite liners made with a combination of compacted soil and plastic liners and systems to collect, treat and dispose of contaminated water from the landfill. These requirements help protect ground water from landfill leaks. The amount of Indiana's waste landfilled over composite liners in 1997 was 70 percent, an increase of 22 percentage points since 1995.

Indiana landfill capacity



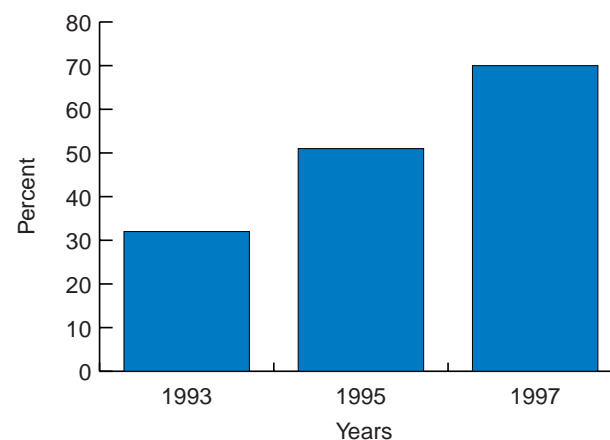
Source: IDEM Office of Solid and Hazardous Waste Management, 1998

Municipal solid waste disposal trends



Source: 1997 Indiana Solid Waste Facilities Annual Report

Municipal solid waste landfilled over composite liners



Source: 1997 Indiana Solid Waste Facilities Annual Report

Tire dumps

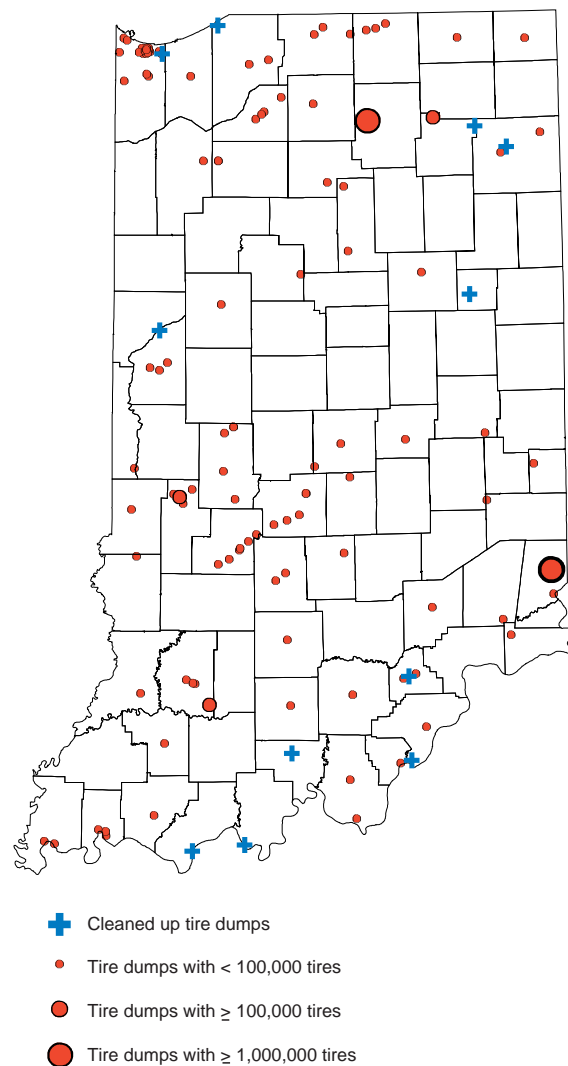
On average, Indiana generates about one waste tire per person per year—currently 5.5 million per year. From 1995 to 1997, more than 1.5 million tires were removed for proper disposal from dumps containing an estimated total of 18.5 million waste tires.

IDEM has identified 164 illegal tire dumps in Indiana. Eleven of these sites, with about 630,000 total tires, were cleaned by landowners or responsible parties in 1998. Four more sites, with an estimated 191,500 tires, were cleaned using state waste tire funds. By the end of 1998, however, IDEM had identified 10 more illegal tire sites. Cleanup of additional sites using state funds is planned for 1999.

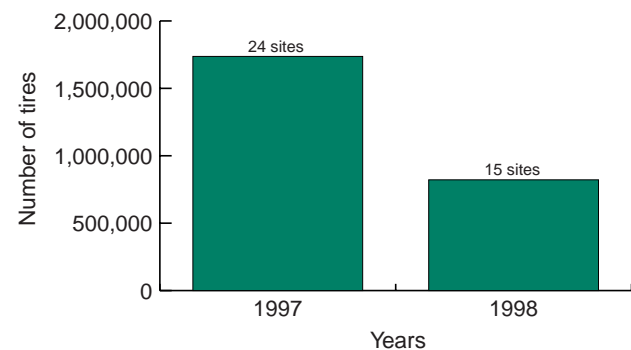
Problems with tire piles

Large waste tire piles are breeding grounds for disease-carrying mosquitos. If set on fire, large tire piles burn with intense heat, blowing thick, black hazardous smoke downwind. Tire fires are difficult to extinguish, sometimes burning for days.

Waste tire dumps



Waste tire cleanup



Source: IDEM Office of Solid and Hazardous Waste Management, 1998